

Abstract

A multi-thermal zone shielding apparatus provides a multi-zone temperature profile for the shield while shielding a portion of a hot workpiece in a high temperature processing system. The apparatus keeps the workpiece temperature hot at the shielded area and maintaining the rest of the shield cooler. The apparatus comprises a multi-thermal zone shield having a low thermal transmittivity section for preventing the heat lost of the shielded portion of the hot workpiece due to less thermal energy transmitting through the shielding portion of the shield, thus maintaining a more uniform temperature at the shielded portion of the workpiece, and a high thermal transmittivity section in the rest of shield for allowing more thermal energy from the hot workpiece transmitting through the shield without heating the shield, thus maintaining a cooler temperature at the portion of the shield not engaged with the workpiece. In a preferred embodiment, the invention further includes a non-reactive gas inlet for creating a pressurized cavity in the vicinity of the shielded portion of the workpiece.